

CLAIMS

1. A resonant linear motor driven cryocooler system comprising:

(A) a resonant linear motor having an internal stroke volume;

(B) a cryocooler spaced from the resonant linear motor; and

(C) connecting tubing extending from the resonant linear motor to the cryocooler, said connecting tubing having a volume which exceeds the internal stroke volume of the resonant linear motor.

2. The cryocooler system of claim 1 wherein the connecting tubing volume is at least twice the internal stroke volume of the resonant linear motor.

3. The cryocooler system of claim 1 further comprising a dashpot positioned on the connecting tubing between the resonant linear motor and the cryocooler.

4. The cryocooler system of claim 3 wherein the dashpot comprises a mass.

5. The cryocooler system of claim 3 wherein the dashpot comprises a spring.

6. The cryocooler system of claim 3 wherein the dashpot comprises a piston.

7. The cryocooler system of claim 3 further comprising a heat exchanger positioned between the resonant linear motor and the dashpot.

8. The cryocooler system of claim 3 further comprising a heat exchanger positioned between the cryocooler and the dashpot.

9. The cryocooler system of claim 1 wherein the cryocooler is a pulse tube cryocooler.

10. The cryocooler system of claim 1 wherein the cryocooler is positioned to provide refrigeration to a superconducting magnet of a magnetic resonance imaging system.